6 F8.
~~330.401~~

1938.

Annual Forest Insect Infestation Report for Yosemite National Park, California.

Emil Ernst
Oct. 22, 1938

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
YOSEMITE NATIONAL PARK
CALIFORNIA

OFFICE OF THE SUPERINTENDENT

October 22, 1938

Narrative Report to Accompany Form No. 10-423, Annual Forest Insect Report:

The park as a whole is constantly under surveillance for any insect infestation developments and the data as reported upon in this report is a compilation of general observations, trail counts, strip surveys throughout the park, and 100% cruises of permanent sample plots aggregating 720 acres. The permanent sample plots for the sugar and ponderosa pine types are located at Wawona, Black Rascal near Chinquapin, at Crouse Creek along the Wawona Road, at Big Meadows, and at Ackerson Meadows. The Bureau of Entomology and Plant Quarantine has another 320 acre plot in the vicinity of Aspen Valley Ranger Station, half of which is on park land.

Observations and counts in the higher elevations where Lodgepole Pine stands are common are made during the summer months by means of pack trips, automobile, and on foot. The detailed strip and permanent sample plot surveys are made each fall around the first of October. Insect control foremen from the CCC camps located in the park assist in the strip and plot surveys. Actually the data in this report is a summation of information gathered throughout the entire year which is applicable to the time of the report. Additional information is obtained from representatives of the Bureau of Entomology and Plant Quarantine who are detailed to specific problems in the park.

All of the methods enumerated in the outline are employed in gathering the data for this report. General observations are supplemented and checked by the detailed information obtained from the strips and sample plots. Detailed examinations of conditions within an infested area are regularly made in order to determine need for control work.

With the exceptions that will be enumerated and enlarged upon, forest insect infestation conditions are on the whole quite satisfactory. Since the fall of 1932, maintenance insect control has been an accepted practice engaged in at every favorable opportunity. It has been responsible for the reduction of a good part of the losses formerly sustained through epidemic infestations in the sugar and ponderosa pine types. At the time of writing this report, the regular fall insect control maintenance campaign is under way at Crane Flat, in Merced Grove of Big Trees, in Yosemite Valley, along the Wawona Road, and along the Glacier Point Road in the vicinity of Pothole Meadows and Bridalveil Creek. Losses in the sugar and ponderosa pine types are expected to show at least a slight increase during the coming winter on account of the large amount of windfall from last winter's storms that was not treated. In the past, solar heat treatment of infested trees and windfalls has been done whenever sun and labor conditions were favorable during the summer. Last summer saw no solar heat treating on account of the large amount of flood rehabilitation work and the added need for labor on Ribes eradication projects.

Accompanying this report for reference purposes is a copy of the park map with the control unit boundaries. The units are based on combinations of timber types, topographical barriers, and entomological factors. Since 1932 ranger district boundaries have shifted several times and will shift again according to changes in transportation facilities, while the units as set up on the map are far less subject to change. On this map are located those areas containing epidemic insect infestations.

Lodgepole Pine Needleminer

The outstanding insect infestation situation is the continued increase in intensity and extent of the area of the Lodgepole Pine Needleminer (Recurvaria milleri Busck) infestations in the high country. Epidemic areas are numerous and widespread, with the most aggressive centers being in the Forsyth Pass area of the Sunrise unit; Rodgers Canyon area of the Piute Creek unit; in sections 30 and 31 along the Bear Valley trail in the Rancheria unit; Kerrick Canyon area which is also in the Rancheria unit; all of these areas aggregate approximately 7 sections, or 5,000 acres, of epidemic infestations. In the Porcupine Flat unit at Porcupine Flat the needleminer infestation has shown a tendency toward decline, but an aggressive barkbeetle infestation must place this area under consideration as a critical one. On the areas named above, needleminer defoliated and infested trees run in the thousands and barkbeetle infested and killed trees are in the hundreds. With the exception of Porcupine Flat, all of the above named epidemic areas are far

removed from ordinary paths of tourist travel and therefore are not to be considered as warranting treatment under present conditions of labor availability and funds. The remoteness of the areas and relatively short season in which the work could be done would call for extreme flexibility in matters of hours, wages, and servicing of the camps that would be installed. CCC regulations and hours of work would make control work costs too high and efficiency too low to be considered on areas of this type that are far removed from normal transportation facilities. As far as known, the meadlemine infestations at Kerrick Canyon, Rodgers Canyon, along the Bear Valley trail, and at Forsyth Pass began to pick up again in intensity following the 1931 flight year, while the Porcupine Flat area failed to show other than a low endemic condition in 1932, which reached an epidemic peak for the present in the 1935 flight of the moths. The Forsyth Pass epidemic area is an extension of the old epidemic area which originally centered in the Tenaya Lake basin and appeared to die out about 1922 in sections 27 and 28 in the Tenaya Lake unit. The Kerrick Canyon infestation was in about the same condition in the fall of 1933 that it is now and showed signs of having started to pick up in 1931. The Rodgers Canyon infestation was in full swing lower down the canyon at the time of the inspection in the fall of 1933 and has since extended its area northward and eastward to include the Neall and Rodgers Lakes territory, tying in with an epidemic condition present along the Smedberg Lake trail into Benson Lake between that lake and Smedberg Lake. The infestation along the Bear Valley trail in the

Hancheria unit was well under way in the fall of 1933 and has since extended the epidemic area northward to include Bear Valley proper where defoliation has not been as bad as in the vicinity of the so-called Needleminer Lakes in Section 31. Barkbeetle infestations are particularly bad in the vicinity of Needleminer Lakes where groups of 1938 attacked Lodgepole Pine have as many as 8 to 10 trees per group and attacks of the beetles run as high as 10 per square foot of bark surface. Hundreds of Lodgepole Pines have been killed in this area in the last several years and the intensity of barkbeetle attack appears to have increased. At the present time the conditions noted for the above area are not anywhere nearly as bad for the Rodgers Canyon area, but losses from barkbeetles can be considered as epidemic.

Areas which at the present time can be considered to have epidemic needleminer infestations but have not reached a stage where severe defoliation is noticeable and which can be expected to develop into bad infestations are located in Bear Valley proper; along the Smedberg Lake trail between Benson Lake and Smedberg Lake in the Piute Creek unit; west of Benson Lake on the Seavey Pass trail; and in Virginia Canyon in the vicinity of the junction of the Virginia Pass and Summit Pass trails in the Return Creek unit.

Needleminer occurrence is common north of the Merced River and east of the Jack Main, Hetch Hetchy, Middle Fork, and El Capitan units.

It was rather hard to find in the immediate vicinity of Tuolumne Meadows and at Merced Lake, areas which are being closely watched. It was not as bad in the large belt of Lodgepole Pine immediately north of Tuolumne Meadows as last year.

The most surprising development occurred in the southeastern portion of the park from the Illilouette Canyon over to Chiquito Pass and then west to Glacier Point where close inspection failed to reveal a single new or old mined needle. Mined needles, although not too numerous, could be found without too much effort throughout this entire area during 1936. It has been suggested that the needleminer south of the Merced River may be another species which does not have the destructive tendencies of Recurvaria milleri Busck. The information gained this year brings a feeling of relief in that all immediate danger of a flare-up south of the Merced River is past.

Barkbeetles of the genus Dendroctonus

Several local infestations of barkbeetles exist widely scattered throughout the park. The better portion of these infestations, mostly endemic, are being taken care of in the regular maintenance control program, while such low epidemic areas as Pot Hole Meadows and Bridalveil Creek drainage are now being treated. The Mountain Pine Beetle, Dendroctonus monticolae Hopk. is responsible for the losses

being sustained in the Lodgepole Pine stands at those places. Several groups of 4 to 8 trees with 1938 attacks were seen along the trail beside Bridalveil Creek and control work now under way should bring these local infestations under control. As mentioned previously, the same insect is responsible for tree losses running in to the hundreds in the needleminer epidemic areas at Rodgers Canyon and along the Bear Valley trail. Very little loss from the same insect can be reported from the epidemic needleminer area at Forsyth Pass.

Several trips were made into the Illilouette Canyon area to see if the time was ripe to do control work in the Jeffrey, Sugar and Lodgepole Pine within the control unit. Each time the report was unfavorable and it appears that it will be necessary to get into this unit early in the year immediately after the snow has left or when the trails will allow the transport of the stub camp equipment. The Illilouette Canyon has had a high endemic infestation for the last several years in the Jeffrey Pine, which is hard to bring under control on account of the manner in which the brood extends its period of feeding in the bark. This area was treated twice in the successive summers of 1934 and 1935, but the infestation appears to be holding a portion of its strength. Pressure of other projects prevented the installation of control stub camps in 1936 and 1937 and the inspections this summer showed that brood conditions were too irregular at the time it was desired to do the work. Either late fall or early

spring are usually the best times to do barkbeetle control work regardless of the barkbeetle involved, but those periods are periods in which CCC labor can not be obtained in stub camp locations. Changes in enrollment at these times tend to radically affect control operations. Crews well broken in are torn apart in the middle of the best working periods. The insects involved in the Jeffrey Pine in the Illilouette Canyon working unit are Dendroctonus jeffreyi and D. monticolae in the Sugar and Lodgepole Pine.

The Mountain Pine Beetle, Dendroctonus monticolae Hopk. shows a tendency toward an increase in the amount of infestation present in the Sugar Pine types. Strip plot surveys indicate a slight general increase in all barkbeetle infestation in the Sugar and Ponderosa Pine types with a shade greater in the case of the sugar pine infestations. Strip surveys in 8 sections on the Gin Flat-Big Meadows slope of the Crane Flat and Big Meadows units show a 300% increase in the number of trees infested with a decrease in the volume of 13% over 1936 while there was a 100% increase in the number of trees and a 15½% increase in the volume lost over 1935. The area in question was maintenance controlled last year and surveys were not made on account of the lack of labor at the time. It is believed that the increase evident over previous loss can be charged against the large amount of windfall from last winter's storms which had not been treated. Windfalls were very numerous last winter throughout

the entire park and will be responsible for the best portion of any increase in infestation in those areas where they exist. Another factor helping sustain infestations in the Crane Flat and Big Meadows is the readjustment of the pine stands in those units to highway construction operations on the new Big Oak Flat and Tioga Roads. For several years after the construction of highways in the park there has been a noticeable loss of large sized trees coming within the influence of construction activities. The bulk of treating last year in these units was along this highway and there are a number of large sized newly infested trees now being treated under similar circumstances.

A slight increase in the amount of Mountain Pine beetle infestation may be present along the Glacier Point and Wawona Roads in the Tunnel-Chinquapin and Wawona Road units, and there may also be a slight increase in the Mariposa Grove area in the Wawona Basin unit. The increase is so small that normal maintenance control should take care of any tendency to radically increase.

The Mountain Pine beetle infestation in the Pot Hole Meadows and Bridalveil Creek areas of the Bridalveil Creek unit has already been referred to as being treated at the present time by labor from the Wawona CCC camp. It is hoped to complete treating in these areas by the time it is possible to burn at lower elevations in the other pine types.

The Western Pine Beetle, Dendroctonus brevicomis shows an increase in the amount of infestation over last year throughout most of

the ponderosa pine types along the west boundary of the park. The increase is decidedly noticeable in Yosemite Valley where, again for the lack of labor, the normal summer maintenance for this unit had to be dropped for the time. Treating crews are now at work on those trees now containing brood which will be treated before snow arrives. It is also hoped to treat along the Wawona and Glacier Point roads before snow prevents the working of the more remote areas. Except for the more remote areas not reached by CCC labor, all of the barkbeetle infestations now present, even though showing some increase, can be kept under control unless an early snowfall seriously interferes with the fall campaign.

One of the distressing signs in the ponderosa pine types is the very large number of new top-kills. It is believed that members of the genus Ips are responsible for these many recently killed tops. Signs of an increase in top killing were present a year ago, but this fall there was no question about a decided increase in the activities of top-killing insects. Tops of reasonably thrifty ponderosa pine are killed back for depths of 10 to 20 or even more feet with the sorrel and red tops contrasting sharply with the green of the unaffected portions of the trees. Top-killing of this type was common just before and possibly concomitant with the peak of the epidemic infestations present in the Park between 1931 and the spring of 1934. Although numerous and having increased decidedly in the last year, this top killing has not quite reached a condition that could be

called epidemic. The importance of the increase lies in that such a wave of top-killing often precedes major epidemics in the ponderosa pine. The Wawona Basin and Wawona Road units in the park are the units showing the greatest number of these top-kills with a large number showing up on adjoining lands of the Forest Service lands in the Sierra National Forest to the south.

The areas causing the most concern are those in which control work becomes almost impossible under the present insect control labor setup. Areas and units such as Illilouette Canyon, Hetch Hetchy, and Porcupine Flat are so located that road and fire hazard conditions require an organization that can be moved on short notice, work in weather conditions that prohibits the use of CCC labor, and can be worked longer hours and more days than CCC labor on account of the short season of the most effective work. On account of the high fire hazard the Hetch Hetchy unit must be worked either late in the fall or very early in the spring; periods at which it is impossible to get a CCC stub camp into the locality on account of the uncertainty of supply. This area was worked early in 1934 by PWA treaters stationed at Ackerson Meadows and has not been worked since that time. The solution to problems such as the above is a small annual regular appropriation for insect control work that can be used as conditions merit or permit.

Minor insect infestations

Elm Leaf Beetle, Galerucella xanthomelaena Schrenk. It appears that this introduced pest has been brought completely under control as not a single individual of the insect was found this summer, nor was any sign of the characteristic defoliation present in the elm trees. The trees are now in their characteristic beautiful fall coloring. On account of the lack of any evidence of the presence of the beetle, no spray work was done on these trees this year.

Alder Flea Beetle, Haltica bimarginata Say. No sign was to be seen of the characteristic defoliation work of this insect, nor were any of the beetles to be seen. It appears that this infestation, at one time definitely epidemic, has completely died out for the present.

Oyster Shell Scale, Lepidosaphes ulmi Linn. Local infestations of this insect are rather common throughout the park, but there was discovered recently in the Alder Creek drainage a rather large epidemic infestation of this insect on native willows. This epidemic infestation covers all those willows within an approximate 40 acre area in the northeast quarter of Section 16, Township 4 South, Range 21 East. Control of the oyster shell scale has never been attempted

in Yosemite National Park and it is recommended that spray operations be attempted against this concentrated epidemic infestation early in the spring. The greatest and also determining difficulty in carrying out control operations will be the opening of the fire road into the area. The usual opening will be too late to carry on the effective spring spraying of this insect and it will be necessary to arrange for an earlier opening of this road. It has been recommended that a Lime-sulphur solution with a 30 Beaume rating be employed on this project. Equipment, with the exception of additional hose, is available and can be used as soon as the road is open.

Hemlock Bark Borer, Melanophila drummondi. The improvement noted in the last two annual reports continues in the Douglas Fir areas of the park. Maintenance control will take care of those very few trees showing infestations. Since control work was undertaken in this timber type approximately 900 Douglas Fir have been treated, of which more than 400 were treated in the initial control work in the early spring of 1934. The infestation is continuing to hang on in the vicinity of Hetch Hetchy Dam where control has never been attempted. Another minor infestation of this beetle is present in the Canyon Ranch area in the Hetch Hetchy unit where control work is now being attempted with CCC labor. Remoteness of this area has contributed to lack of control work on account of

the difficulty of bringing in CCC labor at the right time; i.e., the early spring or very late fall. Other funds are not available.

An unknown borer has been at work in the Alders at Arch Rock and has been responsible for the deths of several of the alders at that point. It is understood that these borers often follow attacks of the Alder Flea Beetle and they have the characteristics of regular bark beetles in their workings. Attempts will be made to bring this appareatly local infestation under control this winter.

Form No. 10-423.

UNITED STATES
DEPARTMENT OF THE INTERIOR
National Park Service
Washington

19 38 Annual Forest Insect Report

Yosemite National Park, California
(Name of national park or monument)

Please Note: All of the below enumerations come under the regular CCC maintenance control program, subject to working conditions, and are in areas with endemic infestations with minor localized exceptions as indicated in the attached narrative report.

Name of plant species attacked	Name of attacking insect	Infestation				Opening and closing dates for control	Control			Estimated total cost next year
							Treatment			
		Location	Extent	Damage	Status		Last year	This year	Next year	
1	2	3	4	5	6	7	8	9	10	11
Sugar Pine	D.monticolae	Crane Flat Big Meadows Tun-Chinq. Wawona Rd. Wawona Bas.	Scattered may average 5-10 per section	Killed	Endemic, possible slight increase combining all units	Oct. 1 to beginning 1939 fire season	Maintenance control	Maintenance control	Maintenance control	CCC labor as available
Ponderosa Pine	D.brevicomis	Crane Flat Big Meadows Tun.-Chinq. Wawona Rd. Wawona Bas. Yosemite V.	Scattered may average 15-25 per section	Killed, sometimes in small groups of 2-5	Endemic, slight increase noticeable	Oct. 1 to beginning 1939 fire season All Year	Maintenance control	Maintenance control	Maintenance control	CCC labor as available
Lodgepole Pine	D.monticolae	Tunnel-Chinquapin along Glacier Pt. Rd.	Scattered may average 40-50 per section	Killed, in groups of 3-8 sometimes	Low epidemic	Oct 1 to beginning 1939 fire season	None	Maintenance and initial control	Maintenance control	CCC labor as available

Date or period of survey: July 1st - October 15, 1938

Submitted by: Emil Ernst

Unit of survey: Park at large, in control units
(Park at large, ranger district, biological control unit)

Title: Assistant Forester

Date: October 21, 1938

Method of survey: General observations, strips, sample plots, control units, detailed examinations
(General observations, systematic examination by campgrounds, strips, plots, watersheds, tree census, or otherwise)

Instructions for preparing report

The report is due not later than November 1 of each year for the preceding 12-month period. If surveys in different control units or ranger districts within a park or monument are made by different individuals, each individual shall make out one of these forms together with an accompanying narrative report.

Distribution of copies:

Original: Regional Director, Attention Regional Forester.
One copy: Director, Attention Chief Forester.
One copy: Entomological field representative, Bureau of Entomology and Plant Quarantine.
One copy: Park or monument files.

This report is to be supplemented with a detailed narrative report in accordance with the attached outline and also with a map showing the location of any new infestation or infestations of epidemic proportions.

All infestations within a park are to be reported on one sheet unless additional space is needed except the following:

1. Infestations of epidemic proportions which should be reported on separate sheets.
2. Surveys made by different individuals which should be reported by each individual on separate sheets.
3. Surveys made by ranger districts or biological control units which should be reported on separate sheets for each ranger district or biological control unit concerned.

Explanation of column headings

1 State scientific and/or common name or names of tree, shrub, or other plant species attacked by the insect.

2 State scientific and/or common name of the insect if known. If unknown, so state, and indicate its general type, whether bark beetle, borer, defoliator, leaf miner, gall aphis, budworm, twig pruner, etc.

3 Indicate whether infestation is general throughout the park or restricted to certain stated areas. Reference the site of the infestation to geographical or cultural features that are commonly known and named on the official map of the park. Examples are: Summit of Beech Knob; Battery 5; Tuolumne Meadows; Shirttail Canyon; Whitman Creek; Campground No. 12; etc.

4 If infestation is limited or confined to a few scattered trees state number of trees attacked. If restricted to roadsides state miles of same affected. If widespread state acreage and average number of trees per acre attacked.

5 Indicate severity of damage caused by the infestation. State whether trees are killed, dying, weakened, defoliated, or otherwise injured by the insect as a primary cause.

6 State whether infestation is a new or old one. If old indicate whether it has increased, decreased, or remained the same since last year.

7 State approximate opening and closing dates of applied control.

8 State what treatment was applied last year, if any, and to what extent it was responsible for any change indicated in column 9.*

9 State what treatment was applied this year, if any, and to what extent it appears to have been effective.*

10 State what treatment is recommended for next year, if any.*

11 Indicate approximate cost in man-days and materials separately of treatment recommended under 10.

* Give exact formula of any sprays or chemicals used or recommended, or indicate S. F. No. as listed in Tree Preservation Bulletin No. 6. State also date or dates of application.

Form No. 10-423.

UNITED STATES
DEPARTMENT OF THE INTERIOR
National Park Service
Washington

1938 Annual Forest Insect Report

Yosemite National Park, California
(Name of national park or monument)

Name of plant species attacked	Name of attacking insect	Infestation				Opening and closing dates for control	Control			Estimated total cost next year
		Location	Extent	Damage	Status		Treatment			
							Last year	This year	Next year	
1	2	3	4	5	6	7	8	9	10	11
Jeffrey Pine Sugar Pine Digger Pine Ponderosa Pine Douglas Fir	D.jeffreyi D.monticolae Flatheads D.brevicomis Mel.drummondi	Hetch Hetchy unit	Scattered general infestation in all named species 7500 acres	Will average about 40 trees all species per sec.killed	Slight increase over last year	March 1- May 15, depending upon fire hazard	None	Attempt being made at some control work by CCC labor	Regular appropriation labor	$2,000.00
Jeffrey Pine Sugar Pine Lodgepole Pine	D.jeffreyi D.monticolae D.monticolae	Illilouette Canyon unit	Mostly on westerly slope of Starr King, 9,000 acres, includes Mono Meadows	Averages 30 trees per section killed	Static	May 1 - June 15	None	None; CCC may work Mono Mdws. this fall	Reg.appro. altho CCC may become available if weather is good	$1,250.00
Lodgepole Pine	D.monticolae	Porcupine Flat unit	Concentrated; not over 2,000 acres	May average 300 per section killed	Continued epidemic localized	May 1 - June 15 if possible	None	None	Regular appropriation	$2,000.00

Date or period of survey: July 1st - October 15, 1938.

Submitted by: Emil Ernst

Unit of survey: Park at large, in control units
(Park at large, ranger district, biological control unit)

Title: Assistant Forester

Method of survey: General observations, strips, sample plots, control units, detailed examinations
(General observations, systematic examination by campgrounds, strips, plots, watersheds, tree census, or otherwise)

Date: October 21, 1938.

Instructions for preparing report

The report is due not later than November 1 of each year for the preceding 12-month period. If surveys in different control units or ranger districts within a park or monument are made by different individuals, each individual shall make out one of these forms together with an accompanying narrative report.

Distribution of copies:

Original: Regional Director, Attention Regional Forester.
One copy: Director, Attention Chief Forester.
One copy: Entomological field representative, Bureau of Entomology and Plant Quarantine.
One copy: Park or monument files.

This report is to be supplemented with a detailed narrative report in accordance with the attached outline and also with a map showing the location of any new infestation or infestations of epidemic proportions.

All infestations within a park are to be reported on one sheet unless additional space is needed except the following:

1. Infestations of epidemic proportions which should be reported on separate sheets.
2. Surveys made by different individuals which should be reported by each individual on separate sheets.
3. Surveys made by ranger districts or biological control units which should be reported on separate sheets for each ranger district or biological control unit concerned.

Explanation of column headings

1 State scientific and/or common name or names of tree, shrub, or other plant species attacked by the insect.

2 State scientific and/or common name of the insect if known. If unknown, so state, and indicate its general type, whether bark beetle, borer, defoliator, leaf miner, gall aphis, budworm, twig pruner, etc.

3 Indicate whether infestation is general throughout the park or restricted to certain stated areas. Reference the site of the infestation to geographical or cultural features that are commonly known and named on the official map of the park. Examples are: Summit of Beech Knob; Battery 5; Tuolumne Meadows; Shirttail Canyon; Whitman Creek; Campground No. 12; etc.

4 If infestation is limited or confined to a few scattered trees state number of trees attacked. If restricted to roadsides state miles of same affected. If widespread state acreage and average number of trees per acre attacked.

5 Indicate severity of damage caused by the infestation. State whether trees are killed, dying, weakened, defoliated, or otherwise injured by the insect as a primary cause.

6 State whether infestation is a new or old one. If old indicate whether it has increased, decreased, or remained the same since last year.

7 State approximate opening and closing dates of applied control.

8 State what treatment was applied last year, if any, and to what extent it was responsible for any change indicated in column 9.*

9 State what treatment was applied this year, if any, and to what extent it appears to have been effective.*

10 State what treatment is recommended for next year, if any.*

11 Indicate approximate cost in man-days and materials separately of treatment recommended under 10.

* Give exact formula of any sprays or chemicals used or recommended, or indicate S. F. No. as listed in Tree Preservation Bulletin No. 6. State also date or dates of application.

Form No. 10-423.

UNITED STATES
DEPARTMENT OF THE INTERIOR
National Park Service
Washington

19 38 Annual Forest Insect Report

Yosemite National Park, California
(Name of national park or monument)

Name of plant species attacked	Name of attacking insect	Infestation				Opening and closing dates for control	Control			Estimated total cost next year
							Treatment			
		Location	Extent	Damage	Status		Last year	This year	Next year	
1	2	3	4	5	6	7	8	9	10	11
Lodgepole Pine	D.monticolae	Rancheria unit, near Needlemine Lakes on Bear V.trail	Possibly 2 sections, and 400 to 700 trees	Killed	Epidemic	None	None	None	None	None
Lodgepole Pine	D.monticolae	Rodgers Canyon in Piute Cr. unit	1 section 100 to 200 trees	Killed	Epidemic	None	None	None	None	None
Lodgepole Pine	Recurvaria milleri Busck.	Rancheria, Piute Cr. Return Cr. Porcupine Flat, Sunrise units	Widespread in slightly more than 5,000 acres	Defoliated and killed in thousands of trees	Epidemic	None	None	None	None	None
							Experimental work for spray control in favorable areas being carried on by Bureau of Entomology and Plant Quarantine within infestation areas			

Date or period of survey: August 27 - August 31, 1938

Unit of survey: Control units
(Park at large, ranger district, biological control unit)

Method of survey: Trail counts and general observations, some detailed examinations
(General observations, systematic examination by campgrounds, strips, plots, watersheds, tree census, or otherwise)

Submitted by: Emil Ernst

Title: Assistant Forester

Date: October 21, 1938

Instructions for preparing report

The report is due not later than November 1 of each year for the preceding 12-month period. If surveys in different control units or ranger districts within a park or monument are made by different individuals, each individual shall make out one of these forms together with an accompanying narrative report.

Distribution of copies:

Original: Regional Director, Attention Regional Forester.
One copy: Director, Attention Chief Forester.
One copy: Entomological field representative, Bureau of Entomology and Plant Quarantine.
One copy: Park or monument files.

This report is to be supplemented with a detailed narrative report in accordance with the attached outline and also with a map showing the location of any new infestation or infestations of epidemic proportions.

All infestations within a park are to be reported on one sheet unless additional space is needed except the following:

1. Infestations of epidemic proportions which should be reported on separate sheets.
2. Surveys made by different individuals which should be reported by each individual on separate sheets.
3. Surveys made by ranger districts or biological control units which should be reported on separate sheets for each ranger district or biological control unit concerned.

Explanation of column headings

1 State scientific and/or common name or names of tree, shrub, or other plant species attacked by the insect.

2 State scientific and/or common name of the insect if known. If unknown, so state, and indicate its general type, whether bark beetle, borer, defoliator, leaf miner, gall aphis, budworm, twig pruner, etc.

3 Indicate whether infestation is general throughout the park or restricted to certain stated areas. Reference the site of the infestation to geographical or cultural features that are commonly known and named on the official map of the park. Examples are: Summit of Beech Knob; Battery 5; Tuolumne Meadows; Shirttail Canyon; Whitman Creek; Campground No. 12; etc.

4 If infestation is limited or confined to a few scattered trees state number of trees attacked. If restricted to roadsides state miles of same affected. If widespread state acreage and average number of trees per acre attacked.

5 Indicate severity of damage caused by the infestation. State whether trees are killed, dying, weakened, defoliated, or otherwise injured by the insect as a primary cause.

6 State whether infestation is a new or old one. If old indicate whether it has increased, decreased, or remained the same since last year.

7 State approximate opening and closing dates of applied control.

8 State what treatment was applied last year, if any, and to what extent it was responsible for any change indicated in column 9.*

9 State what treatment was applied this year, if any, and to what extent it appears to have been effective.*

10 State what treatment is recommended for next year, if any.*

11 Indicate approximate cost in man-days and materials separately of treatment recommended under 10.

* Give exact formula of any sprays or chemicals used or recommended, or indicate S. F. No. as listed in Tree Preservation Bulletin No. 6. State also date or dates of application.

DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

TOPOGRAPHIC MAP
OF
YOSEMITE NATIONAL PARK
CALIFORNIA

FROM GEOLOGICAL SURVEY MAPS
Surveyed between 1898 and 1909
Roads and trails added 1928 by National Park Service

Scale 125000
1 0 1 2 3 4 5 Miles
1 0 1 2 3 4 5 Kilometers
Contour interval 100 feet.
Datum is mean sea level.

To place on North American datum move projection lines 690 feet south and 300 feet west
South of Lat. 38° and west of Long. 119° 30', elevations are 85 feet too high
Polyconic projection

Boundary of Yosemite National Park, as extended by proclamation approved August 13, 1932

Hetch Hetchy and Lake Eleanor reservoirs shown in hatched blue lines; from approximate information only

Edition of 1929, reprinted 1932

Jack Main 62,976.00 acres
Kibbie 11,878.40 ac
Roncheria 69,370.60 acres
Piute Creek 44,952.00 acres
Return Creek 54,784.00 acres
Miguel Meadows 17,203.20 acres
Hetch Hetchy 6,217.60 ac
Colby Mountain 9,149.60 acres
Middle Fork 46,003.20 acres
Cathedral Creek 15,556.00 acres
Deloney Creek 14,309.40 acres
Tuolumne Meadows 18,867.20 acres
Parker Pass 8,806.40 acres
Cold Mountain 8,192.00 ac
Tenaya Lake 9,036.80 acres
Porcupine Flat 15,564.80 acres
Yosemite Creek 28,313.60 acres
Echo Creek 12,902.40 acres
Tuolumne Pass 9,625.60 acres
Lyell Canyon 18,688.00 acres
Crane Flat 20,940.00 acres
El Capitan 8,934.40 acres
Tenaya Creek 4,019.20 acres
Sunrise 15,001.60 acres
Big Meadows 5,324.80 acres
13,900.80 acres
Merced Lake Drainage 45,184.00 acres
Tunnel-Chinquapin 9,907.20 acres
5,734.40 acres
Illilouette Creek 41,242.80 acres
Bridalveil Creek 16,768.00 acres
Wawona Road 17,638.40 acres
Chilnualna Creek 14,825.60 acres
Moraine Meadows 26,291.20 acres
Wawona Basin 16,896.00 acres

SYMBOLS.

Boundaries of control units.

Location of epidemic infestations.

Location of minor mixed high endemic infestations.

EFE
10-21-38

CONVENTIONAL SIGNS

- Park Limits
- Roads and buildings
- Poor or private roads
- Trails
- Railroad and station
- Bridges
- Dam
- U.S. township and section lines
- Section corner recovered
- County boundary
- Reservation boundary
- Land grant boundary
- Old State park boundary
- Triangulation station
- BM 11162 / BM 11704 — Bench marks
- Contours (showing height above sea horizontal form, and steepness of slope of the surface.)
- Depression contours
- 12957 — Figures (showing height above mean sea level instrumentally determined.)
- Spring
- Intermittent streams
- Fresh marsh
- Glacier

ENGRAVED AND PRINTED BY THE U.S.GEOLOGICAL SURVEY

1938.

Annual Forest Insect

Infestation Report.